

AMENDMENTS TO THE CLAIMS:

Please amend claims 1-19, and add new claims 20-25, as shown below.

This listing of claims will replace all prior versions and listings of claims in the Application:

Claim 1 (currently amended): An active matrix liquid crystal display panel for producing visual images, said display panel comprising a first substrate structure and a second substrate structure, and a liquid crystal layer filling a gap between the first substrate structure and the second substrate structure, wherein:

said first substrate structure includes a black matrix defining openings, color filter layers respectively disposed entirely in said openings ~~and a piece~~ with a portion of a material inserted between said black matrix and said color filter layers ~~and~~ , said material having a larger [in] resistivity than said black matrix and said color filter layers;

said second substrate structure includes electrodes for selectively generating local lateral electric fields in a plane parallel to the liquid crystal layer in regions associated with said color filter layers; and

said liquid crystal layer ~~filling the gap between said first substrate structure and said second substrate structure~~ has ~~pieces of~~ a portion of the liquid crystal in said regions for changing values of transparency depending upon the local electric fields.

Claim 2 (currently amended): The active matrix liquid crystal display panel as set forth in claim 1, ~~in which~~ wherein said first substrate structure further includes an overcoat layer partially covering said black matrix and said color filter layers and partially serving as said ~~piece of~~ material.

Claim 3 (currently amended): The active matrix liquid crystal display panel as set forth in claim 2, ~~in which~~ wherein the resistivity of said color filter layers is greater than the resistivity of said black matrix and less than the resistivity of said overcoat layer.

Claim 4 (currently amended): The active matrix liquid crystal display panel as set forth in claim 3, ~~in which~~ wherein when said resistivity of said black matrix is ~~fallen~~ within a range between 10^3 ohm-cm to 10^6 ohm-cm[,] and the resistivity of said color filter layers is ~~fallen~~ within a range between 10^8 ohm-cm to 10^{12} ohm-cm, ~~and~~ the resistivity of said overcoat layer is equal to or greater than 10^{14} ohm-cm.

Claim 5 (currently amended): The active matrix liquid crystal display panel as set forth in claim 2, ~~in which~~ wherein moats are formed in the part of said overcoat layer in such a manner as to be filled with said liquid crystal.

Claim 6 (currently amended): The active matrix liquid crystal display panel as set forth in claim 5, ~~in which~~ wherein the resistivity of said color filter layers is greater than the resistivity of said black matrix and less than the resistivity of said overcoat layer, and the resistivity of said liquid crystal is greater than the resistivity of said overcoat layer.

Claim 7 (currently amended): The active matrix liquid crystal display panel as set forth in claim 1, ~~in which~~ wherein said first substrate structure further includes an overcoat layer covering said black matrix, said color filter layers and said ~~piece of~~ material, and wherein said ~~piece of~~ material is different from said overcoat layer.

Claim 8 (currently amended): The active matrix liquid crystal display panel as set forth in claim 7, ~~in which~~ wherein the resistivity of said color filter layers is greater than the

HAYES SOLOWAY P.C.
130 W. CUSHING ST.
TUCSON, AZ 85701
TEL. 520.882.7623
FAX. 520.882.7643

175 CANAL STREET
MANCHESTER, NH 03101
TEL. 603.668.1400
FAX. 603.668.8567

resistivity of said black matrix and less than the resistivity of said ~~piece of~~ material and the resistivity of said overcoat layer.

Claim 9 (currently amended): The active matrix liquid crystal display panel as set forth in claim 8, ~~in which~~ wherein when said resistivity of said black matrix is ~~fallen~~ within a range between 10^3 ohm-cm to 10^6 ohm-cm[,] and the resistivity of said color filter layers is ~~fallen~~ within a range between 10^8 ohm-cm to 10^{12} ohm-cm, the resistivity of said ~~piece of~~ material is equal to or greater than 10^{14} ohm-cm, and the resistivity of said overcoat layer is equal to or greater than 10^{14} ohm-cm.

Claim 10 (currently amended): The active matrix liquid crystal display panel as set forth in claim 7, ~~in which~~ wherein said ~~piece of~~ material has first portions in said gap between said black matrix and said color filter layers, second portions on the peripheral portions of said black matrix and third portions on the peripheral portions of said color filter layers.

Claim 11 (currently amended): The active matrix liquid crystal display panel as set forth in claim 7, ~~in which~~ wherein said ~~piece of~~ material has first portions in said gap between said black matrix and said color filter layers, second portions on the peripheral portions of said black matrix and third portions overlaid by peripheral portions of said color filter layers.

Claim 12 (currently amended): The active matrix liquid crystal display panel as set forth in claim 7, ~~in which~~ wherein exposed surfaces of said black matrix are covered with said ~~piece of~~ material.

Claim 13 (currently amended): The active matrix liquid crystal display panel as set forth in claim 1, ~~in which~~ wherein said second substrate structure further includes a non-

HAYES SOLOWAY P.C.
130 W. CUSHING ST.
TUCSON, AZ 85701
TEL. 520.882.7623
FAX. 520.882.7643

175 CANAL STREET
MANCHESTER, NH 03101
TEL. 603.668.1400
FAX. 603.668.8567

transparent layer opposing the gap between said black matrix and said color filter layers so as to stop leakage light passing through said gap.

Claim 14 (currently amended): The active matrix liquid crystal display panel as set forth in claim 13, ~~in which~~ wherein said non-transparent layer is selected portions of a common electrode serving as selected ones of said electrodes together with pixel electrodes.

Claim 15 (currently amended): A process for fabricating an active matrix liquid crystal display panel, comprising the steps of:

- a) preparing a first substrate structure including a black matrix defining openings, color filter layers respectively disposed entirely in said openings and a ~~piece~~portion of a material inserted between said black matrix and said color filter layers and larger in resistivity than said black matrix and said color filter layers and a second substrate structure including electrodes for generating local electric fields;
- b) assembling said first substrate structure and said second substrate structure together so that a gap takes place therebetween;
- c) injecting liquid crystal into said gap; and
- d) completing said active matrix liquid crystal display panel.

Claim 16 (currently amended): The process as set forth in claim 15, ~~in which~~ wherein said step a) includes the sub-steps of

- a-1) patterning a first material layer into said black matrix,
- a-2) patterning a second material layer into said color filter layers in such a manner that said black matrix is spaced from said color filter layers, and

a-3) covering said black matrix and said color filter layers with an overcoat layer so that a part of said overcoat layer penetrates into the gap between said black matrix and said color filter layers for serving as said ~~piece~~ of material.

Claim 17 (currently amended): The process as set forth in claim 15, ~~in which~~ wherein said step a) further includes the sub-step of a-4) forming moats in said part of said overcoat layer.

Claim 18 (currently amended): The process as set forth in claim 15, ~~in which~~ wherein said step a) includes the sub-steps of

a-1) patterning a first material layer into said black matrix,

a-2) patterning a second material layer into said color filter layers in such a manner that said black matrix is spaced from said color filter layers,

a-3) patterning a third material layer into said ~~piece~~ of material filling the gap between said black matrix and said color filter layers, and

a-4) coating said black matrix, said color filter layers and said ~~piece~~ of material with an overcoat layer.

Claim 19 (currently amended): The process as set forth in claim 15, ~~in which~~ wherein said step a) includes the sub-steps of

a-1) patterning a first material layer into said black matrix having openings,

a-2) forming said ~~piece~~ portion of a material in such a manner as to partially on peripheral regions of said black matrix and partially in peripheral zones of said openings,

a-3) forming a second material layer into said color filter layers in such a manner as to have peripheral portions on the portions of said ~~piece~~ portion of a material in said peripheral zones, and

a-4) covering said black matrix, said color filter layers and ~~piece~~ portion of a material with an overcoat layer.

Claim 20 (new): An active matrix liquid crystal display panel for producing visual images, said display panel comprising a first substrate structure and a second substrate structure, and a liquid crystal layer filling a gap between the first substrate structure and the second substrate structure, wherein:

said first substrate structure includes a black matrix defining openings, color filter layers respectively disposed in said openings with a portion of a material inserted between said black matrix and said color filter layers, said material having a larger resistivity than said black matrix and said color filter layers;

said second substrate structure includes electrodes for selectively generating local lateral electric fields in a plane parallel to the liquid crystal layer in regions associated with said color filter layers; and

said liquid crystal layer has a portion of the liquid crystal in said regions for changing values of transparency depending upon the local electric fields,

wherein said first substrate structure further includes an overcoat layer covering said black matrix, said color filter layers and said material, and wherein said material is different from said overcoat layer.

Claim 21 (new): The active matrix liquid crystal display panel as set forth in claim 20, wherein the resistivity of said color filter layers is greater than the resistivity of said black matrix and less than the resistivity of said material and the resistivity of said overcoat layer.

Claim 22 (new): The active matrix liquid crystal display panel as set forth in claim 21, wherein when said resistivity of said black matrix is within a range between 10^3 ohm-cm to 10^6 ohm-cm and the resistivity of said color filter layers is within a range between 10^8 ohm-cm to 10^{12} ohm-cm, the resistivity of said material is equal to or greater than 10^{14} ohm-cm, and the resistivity of said overcoat layer is equal to or greater than 10^{14} ohm-cm.

Claim 23 (new): The active matrix liquid crystal display panel as set forth in claim 20, wherein said material has first portions in said gap between said black matrix and said color filter layers, second portions on the peripheral portions of said black matrix and third portions on the peripheral portions of said color filter layers.

Claim 24 (new): The active matrix liquid crystal display panel as set forth in claim 20, wherein said material has first portions in said gap between said black matrix and said color filter layers, second portions on the peripheral portions of said black matrix and third portions overlaid by peripheral portions of said color filter layers.

Claim 25 (new): The active matrix liquid crystal display panel as set forth in claim 20, wherein exposed surfaces of said black matrix are covered with said material.

HAYES SOLOWAY P.C.

130 W. CUSHING ST.
TUCSON, AZ 85701
TEL. 520.882.7623
FAX. 520.882.7643

175 CANAL STREET
MANCHESTER, NH 03101
TEL. 603.668.1400
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REMARKS

The indicated allowability of claims 7-12 is noted, with thanks.

Claims 1 and 15 have been amended to clarify the invention, and better distinguish the invention from the prior art. Claims 1-19 also have been amended to employ more idiomatic English and conform more closely to U.S. practice. No new matter has been entered by any of the foregoing amendments.

Turning to the rejection of claims 1-6 and 13-19 under 35 USC §102 as obvious over Koike et al. (U.S. Patent No. 6,310,672), in view of Akutsu et al. (U.S. Patent No. 6,224,735) and newly cited Matsumoto et al. (U.S. Patent No. 6,414,732), the Examiner's rejection in error.

Amended claim 1 requires that a first substrate "includes a black matrix defining openings, [and] color filter layers respectively disposed entirely in said openings...." None of the Examiner's applied art teaches this feature. The Examiner cites on page 2, 3rd paragraph of the Detailed Action that Koike et al. teaches this feature. However, as can plainly be seen in FIG. 3, Koike et al. teaches a black matrix having holes, with filters disposed either above or below the black matrix (FIG. 1A; FIG. 3). Nowhere does Koike et al. teach a filter disposed in an opening of a black matrix. Neither secondary reference Akutsu et al. nor Matsumoto et al. teaches this feature. Akutsu et al. teaches a black matrix disposed directly next to a colored filter 32 in such a manner that material cannot be inserted between a black matrix and the color filter. And, Matsumoto et al. does not even teach a black matrix. Matsumoto et al. teaches using a leveling layer 14 instead of a black matrix (FIG. 1, col. 2, lines 19-29). Thus, no

HAYES SOLOWAY P.C.
130 W. CUSHING ST.
TUCSON, AZ 85701
TEL. 520.882.7623
FAX. 520.882.7643

175 CANAL STREET
MANCHESTER, NH 03101
TEL. 603.668.1400
FAX. 603.668.8567

combination of Koike et al., Akutsu et al. and Matsumoto et al. can render obvious claim 1, nor any claims dependent therefrom.

Claim 15 is similarly distinguishable over the art. Thus, claim 15 and claims 16-18 which depend thereon also cannot be said to be obvious from the art.

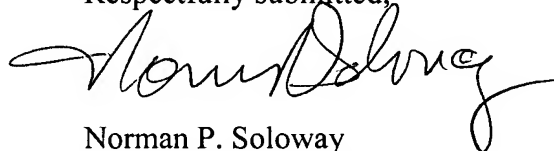
The allowability of claims 7-12 over the art is noted, with thanks. These claims have been presented as new claims 20-25.

Having dealt with all the objections raised by the Examiner, the Application is believed to be in order for allowance. Early and favorable action are respectfully requested.

A credit card payment Form PTO-2038 authorizing payment in the amount of \$860.00 for the RCE fee and for five added dependent claims accompanies this Amendment.

In the event there are any fee deficiencies or additional fees are payable, please charge them (or credit any overpayment) to our Deposit Account Number 08-1391.

Respectfully submitted,



Norman P. Soloway
Attorney for Applicant
Reg. No. 24,315

CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as First Class Mail in an envelope addressed to: MAIL STOP - RCE, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on October 27, 2003, at Tucson, Arizona.

By 

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